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## Money and Energy

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## Money and energy

### Pre-Activity:

Name of Activity: Demonstrating quantity of energy using fake money

What topic does this activity relate to?:

- Physics: Energy, kinetic and potential, translation of energy to motion/work

What should the students learn by the end of this activity?:

- Quantity of energy,
  - how more having more energy means that more work can be done

Key vocabulary (age dependent):

- Energy
- Potential energy
- Kinetic energy
- Energy transfer

Tools/supplies needed (indicate quantity and if it needs to be bought + price range):

- Use some fake currency, such as monopoly money or printed money

Total price (indicate per class or per student):

- > \$0.10 per student, as the money was printed on sheets of paper and cut out

Step-by-step instructions on how to conduct the activity (attach link if found online and make note of modifications for your class here):

- Distribute money to students, give each student varying amounts (1-5).
- Ask them who can buy more with their money, and why
  - students with less money cannot buy as much as students with more money
- Explain that the money in their hand is like potential energy, it can be used to do work (buy things) more energy (money) means more work can be done (can purchase more)

### During Activity:

Number of students present:

What modifications had to be made to the lesson plans and why (if any)?

List and specific feedback from the students:

**Post-activity (reflection):**

What aspects of the activity worked well?

- Since the girls were young (about third grade), giving them different amounts of money upset a few of them because they felt that the other students were getting more than them
- Upon further explaining, they were able to understand the demonstration

What can be improved on?

- More can be explained before distributing the fake money, since the girls were younger they were easily distracted by the fake money when it was handed out
- Make sure to clarify that they will be getting different amounts of fake money prior to distributing, many were quick to question why they had less than some of their friends

What suggestions do you have to adjust the lesson for different purposes or populations?

- If the group is older, you could go more in depth with the discussion of energy and work, with younger groups it's better to keep the topic light and simplified

If money was spent on tools/supplies, in your opinion, was the investment worth it?:

- It was worth it, as it helped students understand that potential energy is converted to kinetic energy, and energy isn't created, but rather comes from somewhere else.

When was it done and by who?

- Done by Emma Hamza and Natalie Wilson, STEM for Success project assistants, on January 13th, 2020 at the Morris Plains Stem Club.

What might be done to adjust the lesson for different purposes or populations?

Reflections on the Activity when Applied in the Classroom:

- One thing we missed from our desired outcome comparison with our actual outcome was not taking our demonstration further in order to enhance their understanding. For example, the girls would have had a better grasp on the concept if we modeled it with them buying something with their fake money instead of them imagining they were to buy something with their fake money. The instructors of the demonstration could then give them more money and ask them to buy something else with it so solidify their understanding of the topic.

Related links:

- E.g. Lesson plans
- E.g. Images/pictures